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EXAMINER	
GODENSCHWAGER, PETER F	

ART UNIT	PAPER NUMBER
1767	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/522,571	APPELMAN ET AL.	
	Examiner	Art Unit	
	PETER F. GODENSCHWAGER	1767	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-12,14-24,26-31,33,35-40 and 45-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-12,14-24,26-31,33,35-40 and 45-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's reply filed July 29, 2010 has been fully considered. Claims 1, 2, 20, 31, 33, 45, and 46 are amended, and claims 1, 2, 5-12, 14-24, 26-31, 33, 35-40, and 45-54 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Mulhaupt et al. (US Pat. No. 4,952,645).

Mulhaupt et al. teaches a heat-curable (10:10-25) composition comprising a glycidyl epoxy resin (3:18-40; 5:1-15; formula VI) and a polyester impact modifier comprising a dimer fatty acid residue (abstract; 2:30-3:20; 5:15-17). Mulhaupt et al. teaches the polyester impact modifier where the polyol component (R^2 of formulas I-IV) consist of residues that are made from/derived from 1,3-propane diol (propylene oxide) or 1,4-butane diol (butylene oxide), diols having a molecular weight between 50 and 200 (6:25-35). Mulhaupt et al. further teaches that the mixture of epoxy resin and polyester contains 5-25% by weight of the polyester relative to the total mixture (a 19:1 to 4:1 weight ratio of epoxy resin to polyester) (9:30-40).

The Examiner recognizes that all of the claimed physical properties are not positively taught by the reference, namely that the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier. However, the reference teaches all of the claimed ingredients, process steps, and/or process conditions. Therefore, the claimed physical properties would inherently be achieved by the composition as claimed and disclosed. If it is the applicant's position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the Examiner's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients, process steps, and/or process conditions.

Claim 2 is rejected under 35 U.S.C. 102(b) as being anticipated by Mulhaupt et al. (US Pat. No. 4,952,645).

Mulhaupt et al. teaches a cured composition (9:40-45; 10:10-25) comprising a reaction product of a glycidyl epoxy resin (3:18-40; 5:1-15; formula VI) and a polyester impact modifier comprising a dimer fatty acid residue (abstract; 2:30-3:20; 5:15-17; 8:50-60). Mulhaupt et al. teaches the polyester impact modifier where the polyol component (R^2 of formulas I-IV) consist of residues that are made from/derived from 1,3-propane diol (propylene oxide) or 1,4-butane diol (butylene oxide), diols having a molecular weight between 50 and 200 (6:25-35). Mulhaupt et al. further teaches that the mixture of epoxy resin and polyester contains 5-25% by weight of the polyester relative to the total mixture (a 19:1 to 4:1 weight ratio of epoxy resin to polyester) (9:30-40).

The Examiner recognizes that all of the claimed physical properties are not positively taught by the reference, namely that the composition comprises phase-separated domains and/or particles comprising the impact modifier. However, the reference teaches all of the claimed ingredients, process steps, and/or process conditions. Therefore, the claimed physical properties would inherently be achieved by the composition as claimed and disclosed. If it is the applicant's position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the Examiner's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients, process steps, and/or process conditions.

Claims 31, 5, 7-12, 26, 28-30, and 35-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Mulhaupt et al. (US Pat. No. 4,952,645).

Regarding Claim 31: Mulhaupt et al. teaches a heat-curable (10:10-25) composition comprising a glycidyl epoxy resin (3:18-40; 5:1-15; formula VI) and a polyester impact modifier comprising a dimer fatty acid residue (abstract; 2:30-3:20; 5:15-17). Mulhaupt et al. teaches the polyester impact modifier where the polyol component (R^2 of formulas I-IV) consist of residues that are made from/derived from 1,3-propane diol (propylene oxide) or 1,4-butane diol (butylene oxide), diols having a molecular weight between 50 and 200 (6:25-35). Mulhaupt et al. further teaches that the mixture of epoxy resin and polyester contains 5-25% by weight of the polyester relative to the total mixture (a 19:1 to 4:1 weight ratio of epoxy resin to polyester) (9:30-40).

The Examiner recognizes that all of the claimed physical properties are not positively taught by the reference, namely that the composition is capable of phase separation upon curing

to form phase-separated domains and/or particles comprising the impact modifier. However, the reference teaches all of the claimed ingredients, process steps, and/or process conditions. Therefore, the claimed physical properties would inherently be achieved by the composition as claimed and disclosed. If it is the applicant's position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the Examiner's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients, process steps, and/or process conditions.

Regarding Claim 5: Mulhaupt et al. teaches the polyester comprises both dimer fatty acids and other dicarboxylic acids (5:15-68), in particular adipic acid (5:47) where the aliphatic radical is tetramethylene. The preferred diol is butanediol MW = 90 (used to make polybutylene oxide) (6:25-35).

Regarding claim 7: Mulhaupt et al. teaches that in formula 1, all of the radicals R^1 and R^3 can be derived from dimeric or trimeric fatty acids, and it is particularly preferred for R^1 to be a trimeric fatty acid (7:40-50). There are twice as may R^1 moieties as R^3, therefore, there is 33% dimeric fatty diol residue.

Regarding claims 8-10: Mulhaupt et al. teaches the composition contains 100g of epoxy and 16.6 g of the impact modifier (13:11-13), which is calculated to a ratio of 6:1 epoxy to impact modifier. The polyester component is between 1 and 25% by weight (9:30-35). The fatty acid component would then be between 0.7% and 17.5% by weight if it is 70% of the polyester (3:19-22).

Regarding claims 11, 12: Mulhaupt et al. teaches reacting an epoxy with 40 or 50% of the impact modifier (12:60-65) and reacting that with an epoxy resin (13:1-15).

Regarding claim 26: Mulhaupt et al. teaches the composition as an adhesive (10:45-55). While Mulhaupt et al. does not specify that the adhesive is a electronic assembly adhesive, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Regarding claims 28 and 29: Mulhaupt et al. teaches reacting an epoxy with 40 or 50% of the impact modifier to make an adduct (12:60-65) and reacting that with a second epoxy resin with a lower equivalent of epoxide/ kg (2.15-2.22 vs. 5.4), and thus a higher molecular weight(13:60-14:5).

Regarding claim 30: Mulhaupt et al. teaches a method comprising curing an epoxy resin composition that had been placed between surfaces/curing a laminate (13:1-30).

Regarding Claims 35-37: Mulhaupt et al. teaches the polyester impact modifier where the polyol component (R^2 of formulas I-IV) consist of residues that are made from/derived from 1,3-propylene diol (polypropylene oxide) or 1,4-butylene glycol (polybutylene oxide) (6:25-35).

Claim 20 is rejected under 35 U.S.C. 102(b) as being anticipated by Mulhaupt et al. (US Pat. No. 4,952,645).

Mulhaupt et al. teaches a prepolymer/adduct comprising a reaction product of a glycidyl epoxy resin (3:18-40; 5:1-15; formula VI) and a polyester impact modifier comprising a dimer

fatty acid residue (abstract; 2:30-3:20; 5:15-17; 8:50-60). Mulhaupt et al. teaches the impact modifier/polyester in an amount of 40% or 50% and the epoxy in an amount of 50% or 60% (Table top of col. 13). Mulhaupt et al. teaches that in formula 1, all of the radicals R^1 and R^3 can be derived from dimeric or trimeric fatty acids, and it is particularly preferred for R^1 to be a trimeric fatty acid (7:40-50). There are twice as may R^1 moieties as R^3, therefore, there is 33% dimeric fatty diol residue. Mulhaupt et al. teaches in addition the polyester comprises both dimer fatty acids and other dicarboxylic acids (5:15-68), in particular adipic acid (5:47) (C_6 dicarboxylic acid with terminal carboxyl groups). Mulhaupt et al. teaches the polyester impact modifier where the polyol component (R^2 of formulas I-IV) consist of residues that are made from/derived from 1,3-propylene diol (polypropylene oxide) or 1,4-butylene glycol (polybutylene oxide) (6:25-35).

Claims 33, 14-19, 21-24, and 38-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Mulhaupt et al. (US Pat. No. 4,952,645).

Regarding Claims 33, 14-19, and 21-24: Mulhaupt et al. teaches a cured composition (9:40-45; 10:10-25) comprising a reaction product of a glycidyl epoxy resin (3:18-40; 5:1-15; formula VI) and a polyester impact modifier comprising a dimer fatty acid residue (abstract; 2:30-3:20; 5:15-17; 8:50-60). Mulhaupt et al. teaches the polyester impact modifier where the polyol component (R^2 of formulas I-IV) consist of residues that are made from/derived from 1,3-propane diol (propylene oxide) or 1,4-butane diol (butylene oxide), diols having a molecular weight between 50 and 200 (6:25-35). Mulhaupt et al. further teaches that the mixture of epoxy

resin and polyester contains 5-25% by weight of the polyester relative to the total mixture (a 19:1 to 4:1 weight ratio of epoxy resin to polyester) (9:30-40).

The Examiner recognizes that all of the claimed physical properties are not positively taught by the reference, namely that the composition comprises phase-separated domains and/or particles comprising the impact modifier of the claimed size and aspect ratio, has the claimed work of adhesion, and work of fracture. However, the reference teaches all of the claimed ingredients, process steps, and/or process conditions. Furthermore, the cured product is made by substantially the same method as the instant composition, the method comprising the steps of (a) prepolymer formation/epoxy-impact modifier adduct formation (12:63-67), (b) epoxy resin composition formation/adding epoxy to the adduct (13:11-15), (c) film formation (13:20-22) and (d) cured under pressure (13:30) of at least 10 tons per square foot (see also Pgs. 14-15 of Applicant's original specification). Therefore, the claimed physical properties would inherently be achieved by the composition as claimed and disclosed. If it is the applicant's position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the Examiner's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients, process steps, and/or process conditions.

Regarding Claims 38-40: Mulhaupt et al. teaches the polyester impact modifier where the polyol component (R^2 of formulas I-IV) consist of residues that are made from/derived from 1,3-propylene diol (polypropylene oxide) or 1,4-butylene glycol (polybutylene oxide) (6:25-35).

Claims 45, 49, and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Mulhaupt et al. (US Pat. No. 4,952,645).

Regarding Claim 45: Mulhaupt et al. teaches a heat-curable (10:10-25) composition comprising a glycidyl epoxy resin (3:18-40; 5:1-15; formula VI) and a polyester impact modifier comprising a dimer fatty acid residue (abstract; 2:30-3:20; 5:15-17). Mulhaupt et al. teaches that in formula 1, all of the radicals R^1 and R^3 can be derived from dimeric or trimeric fatty acids, and it is particularly preferred for R^1 to be a trimeric fatty acid (7:40-50). There are twice as may R^1 moieties as R^3, therefore, there is 33% dimeric fatty diol residue (33:67 ratio of dimer fatty acid to non-dimer fatty acid). Mulhaupt et al. teaches the polyester impact modifier where the polyol component (R^2 of formulas I-IV) consist of residues that are made from/derived from 1,3-propane diol (propylene oxide) or 1,4-butane diol (butylene oxide), diols having a molecular weight between 50 and 200 (6:25-35). Mulhaupt et al. further teaches that the mixture of epoxy resin and polyester contains 5-25% by weight of the polyester relative to the total mixture (a 19:1 to 4:1 weight ratio of epoxy resin to polyester) (9:30-40).

The Examiner recognizes that all of the claimed physical properties are not positively taught by the reference, namely that the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier. However, the reference teaches all of the claimed ingredients, process steps, and/or process conditions. Therefore, the claimed physical properties would inherently be achieved by the composition as claimed and disclosed. If it is the applicant's position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the Examiner's position that the application contains inadequate disclosure that there is no teaching

as to how to obtain the claimed properties with only the claimed ingredients, process steps, and/or process conditions.

Regarding Claims 49 and 50: Mulhaupt et al. teaches the polyester comprises both dimer fatty acids and other dicarboxylic acids (5:15-68), in particular adipic acid (5:47) where the aliphatic radical is tetramethylene. The preferred diol is butanediol MW = 90 (used to make polybutylene oxide) (6:25-35).

Claims 46, 51, and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Mulhaupt et al. (US Pat. No. 4,952,645).

Regarding Claim 46: Mulhaupt et al. teaches a heat-curable (10:10-25) composition comprising a glycidyl epoxy resin (3:18-40; 5:1-15; formula VI) and a polyester impact modifier comprising a dimer fatty acid residue (abstract; 2:30-3:20; 5:15-17). Mulhaupt et al. teaches the polyester impact modifier where the polyol component (R^2 of formulas I-IV) consist of residues that are made from/derived from 1,3-propane diol (propylene oxide) or 1,4-butane diol (butylene oxide), diols having a molecular weight between 50 and 200 (6:25-35). Mulhaupt et al. further teaches that the mixture of epoxy resin and polyester contains 5-25% by weight of the polyester relative to the total mixture (a 19:1 to 4:1 weight ratio of epoxy resin to polyester) (9:30-40).

The Examiner recognizes that all of the claimed physical properties are not positively taught by the reference, namely that the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier. However, the reference teaches all of the claimed ingredients, process steps, and/or process conditions. Therefore, the claimed physical properties would inherently be achieved by the composition as

claimed and disclosed. If it is the applicant's position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the Examiner's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients, process steps, and/or process conditions.

Regarding Claims 51 and 52: Mulhaupt et al. teaches the polyester comprises both dimer fatty acids and other dicarboxylic acids (5:15-68), in particular adipic acid (5:47) where the aliphatic radical is tetramethylene. The preferred diol is butanediol MW = 90 (used to make polybutylene oxide) (6:25-35).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 6, 47, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (US Pat. No. 4,952,645) in view of Groff (U.S. Pat. 3,576,903).

Mulhaupt et al. teaches the composition of claim 1 as set forth above.

Mulhaupt et al. does not teach the impact modifier is a polyamide, a polyurethane, a polyesteramide, a copolymer formed from a polyester and a polyamide, or a polyurethane formed from a polyester. However, Groff teaches a similar composition comprising a copolymer of an ester and an amide (1:65-72). Mulhaupt et al. and Groff are analogous art since they are both concerned with the same field of endeavor, namely epoxy resin coatings. At the time of the

invention a person having ordinary skill in the art would have found it obvious to combine the copolymer of an ester and an amide of Groff with the composition of Mulhaupt et al. and would have been motivated to do so for such desirable properties as high heat resistance and high solvent resistance, as evidenced by Groff (2:40-50).

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (US Pat. No. 4,952,645) in view of Welke et al. (EP 1 026 218).

Mulhaupt et al. teaches the composition of claim 33 as set forth above.

Mulhaupt et al. does not teach using the epoxy resin as an adhesive specifically for bonding electronic components to circuit boards. However, Welke et al. teaches a polyester/epoxy adhesive is used in the electronics industry to bond electronic components to substrates such as circuit boards ([0074]) which is a laminating process. Mulhaupt et al. and Welke et al. are analogous art since they both are from the same field of endeavor, namely epoxy/polyester resin compositions. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the teaching of Welke et al. with the composition of Mulhaupt et al. and would have been motivated to do so to extend the range of applications of the resin composition.

Claims 48 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (US Pat. No. 4,952,645) in view of Groff (U.S. Pat. 3,576,903).

Mulhaupt et al. teaches the composition of claim 2 as set forth above.

Mulhaupt et al. does not teach the impact modifier is a polyamide, a polyurethane, a polyesteramide, a copolymer formed from a polyester and a polyamide, or a polyurethane formed from a polyester. However, Groff teaches a similar composition comprising a copolymer of an ester and an amide (1:65-72). Mulhaupt et al. and Groff are analogous art since they are both concerned with the same field of endeavor, namely epoxy resin coatings. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the copolymer of an ester and an amide of Groff with the composition of Mulhaupt et al. and would have been motivated to do so for such desirable properties as high heat resistance and high solvent resistance, as evidenced by Groff (2:40-50).

Response to Arguments

Applicant's arguments, see Pg. 10 of the reply, filed July 2, 2010, with respect to the rejection(s) of claim(s) 1, 2, 5-12, 14-24, 26-31, 33, 35-40, and 45-54 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a new reading of Mulhaupt et al. (US Pat. No. 4,952,645) as set forth above, namely that the polybutylene oxide residues of Mulhaupt et al. are derived from diols (1,4-butane diol) with the claimed molecular weight.

Applicant's arguments, see Pgs. 11-12 of the reply, filed July 29, 2010 are moot in view of the new grounds of rejection as set forth above.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached form PTO-892.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER F. GODENSCHWAGER whose telephone number is (571)270-3302. The examiner can normally be reached on Monday-Friday 7:30-4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter F. Godenschwager/
Examiner, Art Unit 1767